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ABSTRACT

This paper provides practical advice for making online discussions educationally durable. This advice focuses on all stages of online discussions from designing the assignment guidelines through summative evaluation. While this practical advice is grounded in the author's experience, it is more substantively grounded in a framework defining durable knowledge construction. Topics addressed include: a definition of durable knowledge construction; durability of learning; knowledge construction; designing online discussions; specified elements within a discussion question; questions that promote durable knowledge construction; facilitating online discussion; models for facilitating online discussions (i.e., the traditional model, the discussant model, and the self-analysis model); evaluating students' contributions to online discussions; delineating evaluation criteria; broadening the powers of evaluation through self evaluation and peer evaluation. (Contains 18 references.) (Author/MES)

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Promoting Durable Knowledge Construction through Online Discussion

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Abstract
The success of online discussion is not happenstance. This paper focuses on practical advice for making online discussions educationally durable. This advice focuses on all stages of online discussions, from designing the assignment guidelines through summative evaluation. While this practical advice is grounded in the author's experience, it is more substantively grounded in a framework defining durable knowledge construction.

Introduction

Without proper guidance, online discussions can quickly digress into isolated bits of small talk and random cyber-chatter. These digressions inhibit student learning because discussions that have digressed don't lead students to a fresh and incisive understanding of course material. To avoid these dangers of digression, instructors shouldn't simply throw students into an online discussion and expect learning to happen. For online discussion to benefit students by promoting durable learning, instructors must meticulously design and facilitate discussion. Instructors also must understand how to broaden evaluation so that it, too, further facilitates durable knowledge construction. Before discussing design, facilitation, and evaluation, I define "durable knowledge construction."

What is Durable Knowledge Construction?

Elsewhere, I have offered a theoretical defense of online discussions by pointing to various theories and pedagogies. For example, I have pointed to literature that directly ties online discussion to the use of "computers as a cognitive tool" (Knowlton, forthcoming[a]; Knowlton, 2000). I also have connected online discussions to the synthesis between the private and academic selves (Knowlton, forthcoming[b]; Knowlton, Knowlton, & Davis, 2000). Finally, I have connected online discussions to the Writing-Across-The-Curriculum Literature (Knowlton, forthcoming[a]; Knowlton, forthcoming[b]). While all of these theoretical connections are valid, in this paper I examine "durable knowledge construction" as a heuristic for making decisions about the design, facilitation, and evaluation of online discussions. We can examine what I mean by durable knowledge construction by considering both "durability" in learning and the concept of knowledge construction.

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Durability of Learning

When I talk of "durability" in learning, I am borrowing from Hacker and Niederhauser's (2000) assumption that learning should be "Deep and Durable." Hacker and Niederhauser define durable learning in terms of instructional strategies. Specifically, they argue that principles of active learning, collaboration, effective feedback, and motivation can make learning durable.

I agree with Hacker and Niederhauser (2000) (and I strongly recommend their article as a "good read"); but, for the purposes of this paper, I connect the notion of durable learning to a Taxonomy of thinking. Bloom's Cognitive Taxonomy (Bloom, Englehart, Furst, Hill, & Krathwohl, 1956) can be used to measure higher order thinking skills. *Knowledge* and *comprehension* are the two lowest levels of Bloom's Taxonomy. These two lowest levels are not indicative of durable learning. In general, students focus on the knowledge and comprehension levels of learning as they prepare for multiple choice, matching, and true/false style tests. Such preparation focuses on memorizing isolated facts and understanding static relationships. Knowledge and comprehension are not durable because they quickly fade after the test.

As we move up the Taxonomy, though, we come to higher levels of learning. When we require students to interact with each other on these higher levels–*application*, *analysis*, *synthesis*, and *evaluation*–their interactions will be more durable in the long run. In pointing to the need for online discussions to operate on these higher levels, I am in no way saying that knowledge and comprehension are unnecessary. Clearly, students must know and comprehend information. I am suggesting, though, that knowledge and comprehension do not, by themselves, constitute the types of critical thinking that should be indicative of college courses.

Knowledge Construction

The argument that knowledge can be constructed is based on the notion that truth does not exist apart from our perception of that truth. Thankfully, epistemology and ontology are beyond the scope of this paper. But even those who argue the existence of an objective truth must admit that such truth can only be subjectively known. As fallible human beings, we can't possibly claim to have access to the full span of universal truths. Therefore, to learn truth, individual students must construct it for themselves (Tam, 2000). That is, students "create a personal view of the world" (Jonassen, Davidson, Collins, Campbell, & Haag, 1995, p. 11); that personal view becomes the constructed knowledge of students.

Knowledge construction is best accomplished through collaboration. In general, students learn through the give-and-take among classmates. That is, as students write contributions to discussions, they learn what it is that they are trying to say. The replies that they receive from their classmates further this learning. (For a discussion of writing to learn, see Lindemann, 1995.) When students share ideas in a discussion, they receive feedback on those ideas. Often this feedback from classmates will cause cognitive dissonance for the student because it conflicts with their original views. The dissonance

encourages students to revise their views and test their revised views in light of further peer review among the class (Knowlton, Knowlton, & Davis, 2000).

Designing Online Discussions

While the emphasis of this paper is on the teaching and evaluation of online discussions, I would be remiss to ignore the design of online discussions. To some extent, the separation of design, facilitation, and evaluation is artificial. As you will see in the next section of this paper, for example, to use sound principles of online pedagogy is to, in effect, redesign the scope of the discussion. As you will see in the final section of this paper, evaluation of students must be considered in the design process because they need to know up front how they will be evaluated. So, several issues related to "design" are discussed in future sections of this paper. Still, a word about the design qua precursor to discussion is appropriate.

When designing online discussions, instructors must ask themselves a number of relevant questions. Each question is based on the assumption that a goal of online discussion is to promote durable knowledge construction: Will the students respond to specific questions, or will students have maximum freedom to comment on the aspects of a topic that interest them the most? How can questions best be designed to promote durable knowledge construction among students? What amount of total course time should students spend engaging in discussion? How many different questions should be asked throughout a course?

At this point in the article, I wish that I could offer you hard and fast rules for answering these questions. To do so would be naive, though. The context in which the online discussion occurs will influence the answers to many of these questions. (And, in fact, the context in which online discussions occur will effect the questions themselves.) For example, is the online discussion a supplement to face-to-face classroom discussion or is it a part of an online course? Is the class size small enough to require students to reply to each classmate, or is the class extremely large? The possibilities of various contexts are endless. Thus, rules are impractical. Nevertheless, I address specific elements that should be specified within a discussion question, and I address the type of questions that should be designed.

Specified Elements within a Discussion Question

To some extent, specifying elements that should be evident within a discussion is to specify criteria for evaluation. Criteria for evaluation will be addressed more specifically in the last section of this paper. But, in this section commonalties among questions can be suggested. Sometimes, for example, an individual question may need to deviate from the criteria that governs the scope of discussions during a semester. For example, your general criteria for evaluation may require a minimum of four contributions to a discussion in a given week, but perhaps you realize that a specific question is worthy of more attention than others. So, you may need to designate a new minimum number of contributions for that week. In effect, you may need to over-ride the criteria that governs evaluation.

More substantively, I am an advocate of helping students see the intended level of Bloom's Taxonomy within specific questions. I urge instructors who are designing questions to use the words "apply," "analyze," "synthesize," and "evaluate" in the actual question. If students know that you are framing online discussions with a use of Bloom's Taxonomy, they are more likely to write productive answers to questions if they can tell which level of the taxonomy that their contributions to a discussion should address.

Questions that Promote Durable Knowledge Construction

I have used online discussion for the past eight years. Sometimes, I avoided using specific questions in online discussions and simply required students to write about a general area related to a specific course concept or to react to a required course reading. While such an approach has sparked useful discussions among students, I more often find that students resort to summarizing and paraphrasing (which are indicative of the lower levels of Bloom's Taxonomy). Indeed, students are often so well ingrained into the "teacher-as-stimulus/student-as-response" (Knowlton, Knowlton, & Davis, 2000) mode of thinking that they will resort to the safety of regurgitating course content. This type of summarizing, paraphrasing, and regurgitating will not move students to the upper level of Bloom's taxonomy. Thus, learning will not be durable, and no new knowledge will be constructed.

Because online discussion should obligate students to engage in a way that is indicative of the upper level of Bloom's Taxonomy, I advocate writing specific questions for students to respond to. Note, however, that these are not convergent questions with only one correct answer. Instead, these are divergent questions that will offer students plenty of latitude in the way that they answer. Elsewhere, I have categorized these questions as Domains of Thinking, Case Analysis, and Introspective Questions (Knowlton, forthcoming[b]). *Domains of thinking questions* require students to analyze, synthesize, and evaluate the types of problem solving approaches and knowledge construction mechanisms inherent to a given field. For example, in a Biology course, the scientific method is indicative of problem solving within the field. In economics, certain approaches to knowledge construction are more valued than other approaches. Gwartney and Stroup (1995) offer "Eight Guideposts to economic thinking" (p. 7). But, these approaches that are valid in biology and economics are very different from approaches that would be acceptable in a music theory course. Requiring students to overtly acknowledge and interact with the approaches to problem solving and knowledge construction is valid in the context of online discussion.

Case analysis questions require students to apply course theories and concepts to specific, real world scenarios (Hacker & Niederhauser, 2000). For example, in an organizational management course, students might apply a model of a rhetorical situation to explain factors that enhance (and detract from) effective communication in a specific corporate setting. *Introspective questions* are based on issues of metalearning (Brookfield, 1987; Hacker, Dunlosky, & Graesser, 1998) and are designed to force students to examine "how they learn." For example, students could be asked to analyze their contributions to a previous discussion, evaluate the impact of their contributions as

evidenced through classmates' responses, and synthesize guidelines that will help them be more effective in the future discussions.

Facilitating Online Discussion

I've never really been a fan of the word "facilitating." Somehow, this term seems to undermine the professional authority that professors should hold. Nevertheless, I must admit–somewhat begrudgingly–that my dislike of the term is more a function of my own ego than it is a function of sound pedagogy.

Indeed, the word "professor" has at its roots the notion of professing. "Instructor" implies one who instructs students through a step-by-step process that is characterized by mimicking the one who is giving instructions. Both of these titles imply that part of teaching in an online discussion is to offer cyber-lectures. This is problematic, though, because lectures tend to transfer factual information. Lectures, in general, tend to emphasize the importance of the two lowest levels of Bloom's Taxonomy (Anderson, 1998).

I recognize that there are clear exceptions to this rule. For example, a lecture can be offered to students that will give those students sound criteria for evaluating (an upper level of the taxonomy) the design of an advertisement or the quality of a poem. Also, instructors must sometimes clarify factual information so that students use terminology and facts correctly. In spite of these exceptions, online discussion is not an appropriate place for faculty members to profess. Emphasis should be placed on students' construction of knowledge, not on the instructor's views and perspectives. I offer several models that instructors can use to ensure that they are soundly facilitating online discussions while students construct knowledge. After outlining the steps of each model, I focus on instructors' roles as facilitators. In each case, the instructors' roles are based on the responsibility "to frame" online classrooms (Knowlton, 2000, p. 11).

The Traditional Model

The traditional model requires students to post an original response to the discussion question and then respond to each other. Sometimes this model is very structured with rigid criteria and guidelines, but other times, the traditional model may be used more informally so that students can contribute as they see fit without worrying about a bad grade.

As instructors engage in facilitating online discussions in the traditional model, they must consider strategies for deepening students' engagement with course material. Elsewhere (Knowlton, forthcoming[b]), I offer a number of strategies for facilitation that are appropriate in a traditional model discussion. Instructors should (a) explain the theoretical purposes of online discussion, (b) create a sense of community among participants in an online discussion, (c) model appropriate participation, (d) paraphrase students contributions in light of course theory, (e) synthesize students' contributions to create a comprehensive view of the discussion, and (f) use Socratic questioning (Knowlton, forthcoming[b]).

"To frame" (Knowlton, 2000, p. 11) is based on the notion of the instructor responding to students' initiatives, so within a single discussion each of the above strategies may not be necessary, or even advisable. But instructors should broaden their pedagogical repertoire so that they can appropriately facilitate the knowledge construction dance.

The Discussant Model

The discussant model is based on the view that students should play various roles within a discussion (Morrison & Guenther, 2000). This model contains four phases. These phases are summarized in Table 1.

Table 1. Phases of the Discussant Model	
Phase #1:	Instructors designate student discussant(s).
Phase #2:	All students (except the discussants) contribute original answers to a discussion question.
Phase #3:	Discussants react to the original answers provided by students and facilitate additional discussion among the class.
Phase #4:	Students respond to the discussant and respond to each other in light of the discussants' reactions and interpretations.
Phase #5:	All students write a summary of the discussion

One role of an instructor in this model is to train the discussant. Particularly when online discussion is used with undergraduates, instructors can't assume that a student is prepared for the rigors of being a discussant. So, I recommend the use of a "job aid" that might help discussants understand their role and function. The job aid could simply list strategies for facilitating online discussions. More specific job aids, though, could offer suggestions for words and phrases that will help discussants avoid ad hominem attacks.

Another way to train the discussant is through side coaching. Many discussion boards will allow instructors to send messages to individuals that the entire group will not be able to see. I suggest using this function to point out salient themes or contradictions. Especially when students are serving as discussants for the first time, they will appreciate the assistance. More importantly, in this side coaching, instructors can help students understand the rationale of why those themes are worthy of comment. Side coaching can be used with more than just the discussant. It also can help students appropriately respond to the discussant's inquiries and points.

The Self-Analysis Model

The self-analysis model is a variation of the traditional model. But in the self-analysis model, students are required to metacognitively examine their own contributions to a discussion. This model is based on Brookfield's (1987) view that critical thinking is a combination of identifying assumptions in one's own thinking and visualizing alternatives based on those assumptions. The phases of this model are represented in table 2.

Table 2. Phases of the Self-Analysis Model	
Phase #1:	Students contribute original answers to a discussion question.
Phase #2:	Students offer replies to each other as a means of broadening the discussion's scope.
Phase #3:	Students write a summary of the discussion content.
Phase #4:	Students write a self-analysis of their role in the discussion.

Phase four has two purposes. First, students should write a self-analysis of their own assumptions that are inherent to their discussion contributions. What a student didn't say–assumed to be true–can sometimes be just as revealing as what a student did say. So, students should recognize and elaborate on their tacit assumptions. Second, the self-analysis should examine their own propensities as learners. For example, students might be encouraged to elaborate on their own emotional reactions as the discussion developed. The student might also be encouraged to offer and defend reactions about the usefulness (or application) of the discussion. This type of metacognitive activity can help the students learn about their own learning. Therefore, in future discussions, they have a chance to learn more efficiently.

The instructor's role in this model is to help students come to terms with their implicit assumptions and to help students develop a plan of action for bringing the rationality of those assumptions to light. For example, after phase two of the discussion, instructors can use side coaching to point out to students hidden assumptions. Instructors can also ask students to address in the self-analysis a particularly poignant (or particularly ineffective) comment that the student made during phase one or two of the discussion.

Evaluating Students' Contributions to Online Discussions

Many problems are inherent to evaluating students' work in general (Anderson, 1998; Speck, 1998; Knowlton & Knowlton, forthcoming) and online discussions specifically (Bauer & Anderson, 2000). For example, sometimes instructors wait until the end of a discussion to evaluate students' contributions. In waiting, instructors are not distinguishing between "assessing," "grading," and "providing feedback."

Even when instructors do provide feedback, they confuse students because they aren't clear in what they are evaluating. Instructors may evaluate whether students "vigorously

participated" or "substantively engaged themselves." This lack of clarity is problematic because it assumes instructor's understand "vigor," "substance," and "engagement" the same way that students understand these same terms. Indeed, when instructors don't meticulously delineate guidelines and criteria for discussion, students have no choice but to depend on their past experiences to determine the amount and type of participation in which they should engage (Knowlton, Knowlton, & Davis, 2000).

A related problem arises when instructors view themselves as the sole evaluator of students. On the one hand, instructors are the facilitators and counselors of student learning as described in the previous section of this paper. On the other hand, though, instructors must play the role of judge a jury by deciding the students' fate–usually expressed as a grade. I question the ethical implications of an instructor playing both roles. I also assert that students are tacitly aware of this contradiction, and it leads them to be distrustful of both an instructor's advice as a facilitator of knowledge construction and an instructor's evaluation of students' work as a jury and judge. The good news is that instructors can overcome these problems by meticulously delineating criteria for evaluation and broadening the powers of evaluation through self-evaluation and peer evaluation.

Delineating Evaluation Criteria

Establishing criteria is, to some extent, idiosyncratic to an instructor's approach. It may be further idiosyncratic to a particular discipline. The types of online discussion expected in a theology course, for example, may be markedly different from the types of discussion needed in a engineering course. That is, the domains of thinking in a given field will influence evaluation criteria. So, part of establishing criteria requires instructors to ask themselves about the nature of dialogue that occurs in their own discourse communities.

Establishing criteria is not only idiosyncratic to instructors and disciplines, but also it is idiosyncratic to particular classes. As instructors get to know the goals, interests, strengths, and weaknesses of a particular group of students, they may find it necessary to change and adapt criteria. I also advocate opening the door to discussions with students about re-negotiating criteria (Knowlton, 2000). My experiences indicate that students–by virtue of being the ones participating in discussion–often have stronger insights into what aspects of the discussion should be evaluated than I have as an observer and facilitator of the discussion.

In spite of the idiosyncrasies of establishing criteria, I advocate some criteria as being standard when establishing the guidelines of a discussion. Bauer and Anderson (2000) suggest three separate rubrics for evaluating students' contributions to discussions. The first rubric deals with content, the second with expression, and the third with participation. Such an approach may be useful, but I question the value of three separate rubrics. Students are often overly concerned with a grade–as opposed to learning–and they will spend large amounts of time trying to make sense of these three different layers of analysis. I also question the value of over-analyzing expression (mechanics of writing). Online discussions are not revised, formalized pieces of writing; they are essentially

rough drafts. By over-analyzing mechanics, I am concerned that students will stop focusing on constructing knowledge and start focusing on eliminating comma splices.

Sometimes, the guidelines for discussion are very open-ended. They include items that require a large amount of interpretation on the part of instructors and students. For example, participation in discussions might be evaluated based on whether or not a student

- uses vocabulary and terminology indicative of the particular field of study.
- addresses salient theories of the field in a way that is indicative of the types of inquiry commonly accepted within a field.
- organizes and evaluates data, themes, theories, ideas, and perspectives in a productive way.
- uses clear, concise communication and grammar.
- interacts with classmates.
- shows integrity, timeliness, flexibility, and helpfulness as indicators of collegiality.

My experiences suggest that these types of criteria may be valuable for students who understand the implications of each criterion and have experience communicating in academic contexts; but for students who are novices in academic discourse, such loose criteria will be disconcerting.

In most discussions, I phrase the criteria as questions that students can answer about their own work. I also separate the criteria for a strong initial contribution from the criteria for a strong reply. I evaluate initial contributions to a discussion based on the following criteria:

- Is the contribution mechanically clear enough for readers to understand the points being made?
- Is the contribution on time?
- Does the contribution meet the minimum length requirements?
- Does the contribution reference assigned readings or other resources?
- Does the post contain "critical thinking" that is indicative of the paradigms in the field?
- Are the ideas communicated with respect for those who may dissent?

Of these criteria, the issue of length deserves explanation. I usually require students' original posts to be roughly two pages long. I assure students that I'm not a "line counter"; and since some e-mail software and conferencing tools don't show page breaks, I acknowledge that determining length requires some guess-work. Still, giving a

minimum length is important because it takes some length to construct perspectives that can become the basis of knowledge. "Writing to learn" requires engagement. Engagement takes time and effort. The minimum length requirement assures that students are spending the time to become engaged.

For replies, I use the following criteria to determine quality:

- Is the reply mechanically clear enough for readers to understand the points?
- Is the reply on time?
- Are the minimum number of replies written?
- Does the tone of the reply demonstrate respect towards the author of the original post?
- Does the reply inspire further discussion among the class?

Broadening the Powers of Evaluation: Self-Evaluation

For the benefits of online discussions to be realized, students must have formal opportunities for self-evaluation. That is, they must practice evaluating their own contributions to an online discussion against a clearly articulated set of criteria. A "yes/no" checklist, for example, can be useful to students as they try to focus on the evaluation criteria and the way their own contributions to a discussion meet those criteria.

To go beyond checklists, students can be asked to write a paragraph demonstrating how they met each criterion in a given discussion. Instructors might even require students to cut and paste excerpts from their contributions as evidence of meeting the evaluation criteria. As students cut and paste, they are reorganizing their own data by creating a database of their contributions. Through the reorganization process, students are thinking about their own thinking (Kuhn, 1999).

Broadening the Powers of Evaluation: Peer Evaluation

Peer evaluations can also be beneficial in online discussions. Informally, the interaction of the discussion is a form of continuous peer evaluation. When students engage in online discussion, they are receiving feedback on the quality of their ideas. Responses from classmates, for example, can help a student understand how readers interpreted a contribution to a discussion. This informal feedback is what leads students to revise and restate their ideas.

More formally, instructors can create "feedback groups" or peer-review partners. Within these groups, students complete Likert-scale questionnaires or dichotomous checklists that are designed to provide classmates with feedback. Instructors might also ask students to nominate two or three classmates who have made meaningful contributions to a particular discussion. Such nominations emphasize to students that their opinions matter. These types of nominations also place evaluation from the readers of the discussion–

students–in a place of higher prominence than evaluation from the formal authority in a classroom–the instructor. A simple post from the instructor can go a long way toward helping students see the importance of participating rigorously: "Congratulations to Cindy and Keshia. You rewarded them with praises for their contributions last week."

Summary and Conclusion

Durable knowledge construction through online discussion is not happenstance. As instructors consider using online discussion, they should explore the theoretical basis for using online discussion. They should not simply use online discussion because the technology is available.

My experiences have shown me–and theory seems to support my experiences–that when an instructor considers the theoretical rationale for online discussion and designs, facilitates, and evaluates students with that rationale in mind, the educational benefits of online discussion can be substantial. Through these considerations of the instructor, students have opportunities to construct knowledge that will benefit them in their future endeavors.

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